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IBM CORPORATION, INTELLECTUAL PROPERTY LAW

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ERIC L. BARSNESS, PETER J. JOHNSON,  
MICHAEL P. KORANDA, RANDY W. RUHLOW, and  
JOHN M. SANTOSUOSSO

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Appeal 2009-005858  
Application 10/829,624  
Technology Center 2100

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Decided: December 14, 2009

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Before LEE E. BARRETT, ST. JOHN COURTENAY III, and  
STEPHEN C. SIU, *Administrative Patent Judges*.

SIU, *Administrative Patent Judge*.

DECISION ON APPEAL  
STATEMENT OF THE CASE

This is a decision on appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-44. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

*Invention*

The invention relates to identifying mergeable data in a data processing system and identifying correlated columns from one or more database tables (Spec. ¶ [0001]).

Independent claims 1 and 17 are illustrative:

1. A computer-implemented method for identifying correlated columns from database tables, comprising:
  - determining correlation attributes for a first column and a second column from one or more database tables, the correlation attributes describing for each column at least one of the column and content of the column;
  - comparing the correlation attributes from the first and second column;
  - identifying similarities between the first and second column on the basis of the comparison;
  - on the basis of the identified similarities, determining whether the first and second column are correlated;
  - upon determining the first and second columns are correlated, merging the first and second columns to create a third column that contains each data value stored in the first and second columns; and
  - storing the third column in the database.
17. A computer-implemented method for identifying correlated columns from database tables, comprising:
  - determining metadata for at least two columns from one or more database tables, the metadata describing characteristics of each column;

analyzing content from the at least two columns from the one or more database tables;

determining a degree of correlation between the at least two columns using the determined metadata and the analyzed content; and

storing the value representing the degree of correlation in the database.

### *References*

The Examiner relies upon the following references as evidence in support of the rejection:

Sandler	US 2003/0217033 A1	Nov. 20, 2003
Kaufman	US 2004/0073565 A1	Apr. 15, 2004

### *Rejection*

Claims 1-44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sandler and Kaufman.

### ISSUE 1

Appellants argue that “the values in ‘field K1 1804 that have the same values in field F1 1806’ do not teach or suggest ‘correlation attributes’” (App. Br. 13). Appellants further argue that “[t]he values in the example field ‘K1’ of *Sandler* are not correlation attributes of the values in the field ‘F1’ at all; instead, the field values are simply data values of two columns in the example ‘T1’ table” (App. Br. 14).

*Issue:* Did Appellants demonstrate that the Examiner erred in finding that the combination of the Sandler and Kaufman references teaches or

suggests determining correlation attributes for a first column and a second column from one or more database tables, the correlation attributes describing for each column at least one of the column and content of the column?

## ISSUE 2

Appellants argue that “the process of ‘combining the same values in fields’ [does not disclose] the step of ‘determining the degree of correlation’ between a first database column and a second database column” (App. Br. 19).

*Issue:* Did Appellants demonstrate that the Examiner erred in finding that the combination of the Sandler and Kaufman references teaches or suggests determining a degree of correlation between at least two columns using the determined metadata and the analyzed content?

## FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

1. Sandler teaches that “[f]requently, database records are presented logically in the form of a table, with records as the rows of the table, and attributes as the columns” (¶ [0002]). “[E]ach table or ‘relation’ stored in the database 200 is composed of columns and rows. Each row entry in the table contains related data, also called a record, and each column in the table specifies an attribute of the records” (¶ [0057]).

2. Sandler teaches “an example of an aggregation operation” (§ [0234]) in which “the field F1 1806 in table T1 1800 is mapped many-to-one to the field K 1808 in the table TARGET 1802” (§ [0235]). “[A]ll of the values in field K1 1804 that have the same values in field F1 1806 must be combined to provide a value for field F 1810 in table TARGET 1802” (*id.*). As part of this example, Sandler discloses “the starting state of tables T1 1800 and the target table TARGET 1802” (§ [0235]; fig. 18A).
3. Kaufman teaches a USERS table (§ [0136]; p. 175), a SECURITY\_GROUP\_USER table (§ [0138]; p. 184), and a PEOPLE table (§ [0135]; p. 179). USERS includes the primary key Users\_Key (p. 175) and the foreign key People\_Key (p. 183). SECURITY\_GROUP\_USER includes the foreign key Users\_Key (p. 184). And PEOPLE includes the primary key People\_Key (p. 179). These primary and foreign keys are used to establish relationships among the three tables (fig. 5B).
4. The Specification discloses that “metadata describes characteristics of each column” (§ [0010]). The columns described correspond to the columns analyzed for a degree of correlation (claim 17).

## PRINCIPLES OF LAW

### *Obviousness*

The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). “A claim can be obvious even where all of the claimed features are not found in specific prior art references, where ‘there is a showing of a suggestion or motivation to modify the teachings of [the prior art] to the claimed invention.’” *Ormco Corp. v. Align Technology Inc.*, 463 F.3d 1299, 1307 (Fed. Cir. 2006) (alteration in original) (citation omitted).

## ANALYSIS

### *Issue 1*

Based on Appellants’ arguments in the Appeal Brief, we will decide the appeal with respect to issue 1 on the basis of claim 1 alone. *See* 37 C.F.R. § 41.37(c)(1)(vii).

The Examiner has not shown that all of the claim limitations are taught or suggested by Sandler and Kaufman. Sandler teaches the aggregation of values in field K1 which have the same values in field F1 (FF 2). Sandler provides example values (FF 2), but does not provide a teaching of how those values are determined. Appellants’ claims require the step of “determining correlation attributes” (claim 1).

In addition, the values in field K1 are merely content. They do not describe a column or its content. Thus, these values are not correlation attributes for a column. Therefore, the teachings of Sandler cited by the Examiner do not show determining correlation attributes for a first column and a second column from one or more database tables, the correlation attributes describing for each column at least one of the column and content of the column.

The Examiner has not shown that Kaufman cures these deficiencies. Kaufman teaches the tables USERS, SECURITY\_GROUP\_USER, and PEOPLE (FF 3). These tables have relationships formed by a set of primary and foreign keys (FF 3). Sandler shows that a database table contains rows and columns (FF 1), but does not teach that a database table itself is a row or a column. The Examiner has not identified any teachings in Kaufman that show that a database table can also be a column. Therefore, the teachings in Kaufman relied upon by the Examiner are not appurtenant to these claim limitations, which relate to columns.

Accordingly, we find Appellants have met the burden of showing the Examiner erred in rejecting claims 1-16, 22-37, and 43.

### *Issue 2*

The Examiner argues that “the step of mapping by combining the same values in fields corresponds to the step of determining the degree of correlation as claimed” (Ans. 12). Sandler teaches aggregation of table T1’s K1 values for rows having the save value in field F1 (FF 2). But the result



of this aggregation is merely a target table having only a single row for each unique value found in F1 with the sum of the corresponding K1 values (FF 2). Moreover, Sandler does not teach or suggest that the initial values have any particular meaning, such as a component to a degree of correlation. Thus, the combined values have no particular meaning in Sandler, aside from being summation results. Therefore, the Examiner has not shown that the resulting values indicate a degree of correlation.

In addition, the degree of correlation between at least two columns must be determined using determined metadata and the analyzed content. Metadata describes characteristics of each column to be analyzed for a degree of correlation (FF 4). The Examiner argues that “the ‘many-to-one’ corresponds to the metadata claimed” (Ans. 12). But Sandler teaches that the many-to-one mapping indicates how rows in the TARGET table are based on the rows in the T1 table (FF 2). The many-to-one mapping does not describe characteristics of the columns or rows in T1, just the sources for the aggregation results found in TARGET (FF 2). Thus, the Examiner has not shown that Sandler teaches the use of determined metadata in determining a degree of correlation.

Furthermore, the Examiner has not shown that Kaufman cures these deficiencies. The cited portions of Kaufman describe relationships among tables (FF 3). These teachings are not appurtenant to these claim limitations, which relate to columns.

Accordingly, we find Appellants have met the burden of showing the Examiner erred in rejecting claims 17-21, 38-42, and 44.

### CONCLUSIONS OF LAW

Based on the findings of facts and analysis above, we conclude that Appellants have demonstrated:

1. that the Examiner erred in finding that the combination of the Sandler and Kaufman references teaches or suggests determining correlation attributes for a first column and a second column from one or more database tables, the correlation attributes describing for each column at least one of the column and content of the column (Issue 1); and
2. that the Examiner erred in finding that the combination of the Sandler and Kaufman references teaches or suggests determining a degree of correlation between at least two columns using the determined metadata and the analyzed content (Issue 2).

### DECISION

We reverse the Examiner's decision rejecting claims 1-44 under 35 U.S.C. § 103(a).

### REVERSED

msc

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